

Project Wheat Quarter (Shredded Wheat Development), WGC, Northern Site		Date Start: 26/06/18 Finish: 26/06/18	Co-ordinates 524046.573 212889.920	Reference WS01 -18
Client Wheat Quarter Limited	Project Ref. 016-1512	Datum 85.580 m	Sheet 01 of 01	
Plant and Equipment Used RP Drilling Windowless Tracked Rig		Logged by MS		

Depth	Geology	Description	Elevation	Well Installation	Water	Sample No.	Lab Analysis	PID Readings
0.0			0.0-0.1					0 50 100 150 200
0.5		MADE GROUND – Tarmac car park surface						
1.0		Loose sandy MADE GROUND with ash, small flints and limestone fragments, dry, no odour	0.1-0.7			WS01 Soil 0.4-0.7m	Suite B ASB VOC SVOC SOM	1.4 ppm
2.0		Soft to firm orange/brown clay becoming lighter MADE GROUND, dry, no odour	0.7-2.0					
2.5						WS01 Soil 2.0-2.3m	Suite B ASB VOC SVOC	1.9 ppm
3.5		Compact orange/brown sandy GRAVEL with lots of flint, dry, no odour	2.0-3.5					
4.0								
4.5								
5.0		Stiff brown (orange), sandy silty CLAY with flint fragments, dry, no odour	3.5-5.0					

Remarks

J F Hunts compound car park. Location cored.
End @ 5.0 m CLAY
No water encountered.



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Project		Date	Co-ordinates	Reference
Wheat Quarter (Shredded Wheat Development), WGC, Northern Site		Start: 26/06/18	524096.340	WS02
		Finish: 26/06/18	212948.924	
Client	Project Ref.	Datum	Sheet	-18
Wheat Quarter Limited	016-1512	84.809 m	01 of 01	
Plant and Equipment Used		Logged by		
RP Drilling Windowless Tracked Rig		MS		

Depth	Geology	Description	Elevation	Well Installation	Water	Sample No.	Lab Analysis	PID Readings
0.0								0 50 100 150 200
0.0-0.15		MADE GROUND – Tarmac car park surface with concrete	0.0-0.15			WS02 Soil 0.15-0.4m		2.2 ppm
0.15-0.4		Loose black MADE GROUND with ash, lots of red brick fragments, dry, no odour	0.15-0.4			WS02 Soil 0.6-0.8m	Suite B ASB VOC SVOC	2.3 ppm
0.4-1.0		Firm to stiff, brown/dark grey clay MADE GROUND with black patches, flints, gravel and red brick, dry, no odour	0.4-1.0					
1.0-2.0		Firm brown/orange silty sandy CLAY with flint, gravel and black sandy patches, slightly damp, no odour	1.0-2.0			WS02 Soil 1.8-2.0m	Suite B ASB VOC SVOC	1.4 ppm
2.0-3.2		Compact brown/orange sandy GRAVEL with lots of flint, dry, no odour	2.0-3.2					
3.2-3.5		Stiff brown/orange very sandy CLAY with flint, gravel, dry, no odour	3.2-3.5					
3.5								
4.0								
4.5								
5.0								

Remarks

Old Shredded Wheat employee car park. Location cored.
End @ 3.5 m CLAY.
No water encountered.



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Project Wheat Quarter (Shredded Wheat Development), WGC, Northern Site		Date Start: 27/06/18 Finish: 27/06/18	Co-ordinates 524042.547 212962.252	Reference WS03 -18
Client Wheat Quarter Limited	Project Ref. 016-1512	Datum 85.364 m	Sheet 01 of 01	
Plant and Equipment Used RP Drilling Windowless Tracked Rig		Logged by MS		

Depth	Geology	Description	Elevation	Well Installation	Water	Sample No.	Lab Analysis	PID Readings
								0 50 100 150 200
0.0		Loose brown topsoil MADE GROUND with gravel/flint, red brick rootlets (grass), dry, no odour	0.0-0.4					
0.5						WS03 Soil 0.5-0.8m	Suite B ASB VOC SVOC SOM	2.6 ppm
1.0		Black ashy layer MADE GROUND with flint, chalk, coal, red brick fragments dry, no odour	0.4-1.0					
1.5								
2.0		Firm brown/orange sandy CLAY with flint/gravel, dry, no odour	1.0-2.5					
2.5						WS03 Soil 1.5-1.8m	Suite B ASB VOC SVOC	2.1 ppm
3.0		Compact brown/orange sandy GRAVEL with flint, dry, no odour	2.5-2.7					
3.5								
4.0		Firm brown/orange sandy CLAY with flint/gravel, dry, no odour	2.7-3.0					
4.5								
5.0		Compact brown/orange sandy GRAVEL with flint, dry, no odour	3.0-3.4					
		Stiff brown/orange sandy CLAY, dry, no odour	3.4-4.0					

Remarks

Grassed area near to temporary Hollywell Compound.
End @ 4.0 m CLAY.
No water encountered during drilling.



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Project Wheat Quarter (Shredded Wheat Development), WGC, Northern Site		Date Start: 26/06/18 Finish: 26/06/18	Co-ordinates 524107.982 213011.881	Reference WS04 -18
Client Wheat Quarter Limited	Project Ref. 016-1512	Datum 84.288 m	Sheet 01 of 01	
Plant and Equipment Used RP Drilling Windowless Tracked Rig		Logged by MS		

Depth	Geology	Description	Elevation	Well Installation	Water	Sample No.	Lab Analysis	PID Readings
0.0								0 50 100 150 200
		MADE GROUND – Tarmac car park surface	0.0-0.1					
			0.1-0.4					
0.5		Loose black MADE GROUND with ash, lots of small red brick fragments, dry, no odour	0.4-0.5			WS04 Soil 0.1-0.4m	Suite B ASB VOC SVOC	3.4 ppm
1.0		Large red brick fragments MADE GROUND						
			0.5-1.2			WS04 Soil 1.-1.2m	Suite B ASB VOC SVOC PCB	2.2 ppm
1.5		Stiff brown/orange clay with flint, gravel black sandy patches and some red brick MADE GROUND, dry, no odour						
2.0								
		Firm to stiff brown/orange CLAY with black sandy patches, dry, no odour	1.2-2.0					
2.5								
		Compact brown/orange sandy GRAVEL with lots of flint, dry, no odour	2.0-3.4					
3.0								
3.5								
4.0								
4.5								
5.0								

Remarks

Old Shredded Wheat employee car park near to tree line. Location cored.
End @ 3.4 m GRAVEL. Unable to progress past 3.4 m due to large flints.
No water encountered.



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Project		Date	Co-ordinates	Reference WS05 -18
Wheat Quarter (Shredded Wheat Development), WGC, Northern Site		Start: 27/06/18 Finish: 27/06/18	524057.586 213021.924	
Client	Project Ref.	Datum	Sheet	
Wheat Quarter Limited	016-1512	84.978 m	01 of 01	
Plant and Equipment Used		Logged by		
RP Drilling Windowless Tracked Rig		MS		

Depth	Geology	Description	Elevation	Well Installation	Water	Sample No.	Lab Analysis	PID Readings
0.0								0 50 100 150 200
0.5		Loose brown topsoil MADE GROUND with gravel/flint, rootlets (grass), dry, no odour	0.0-0.4			WS05 Soil 0.7-0.9m	Suite B ASB VOC SVOC SOM	2.3 ppm
1.0								
1.5		Stiff brown CLAY with occasional chalk fragments, dry, no odour	0.4-1.5			WS05 Soil 1.5-1.8m		0.2 ppm
2.0		Compact brown/orange sandy clay gravel with flints MADE GROUND, dry, no odour	1.5-1.8					
2.5								
3.0		Firm light brown CLAY with gravel and flint, dry, no odour (poor recovery)	1.8-3.3					
3.5		Compact brown/orange sandy clay gravel with flints, dry, no odour						
4.0	flint layers	3.3-4.1					
4.5						WS05 Soil 4.5-5.0m	Suite B ASB VOC SVOC	3.0 ppm
5.0		Loose orange SAND, dry, no odour	4.1-5.0					

Remarks

Grassed area near to PW Gates access road.
End @ 5.0 m SAND.
No water encountered during drilling.



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Project Wheat Quarter (Shredded Wheat Development), WGC, Northern Site		Date Start: 27/06/18 Finish: 27/06/18	Co-ordinates 524101.982 213046.090	Reference WS06 -18
Client Wheat Quarter Limited	Project Ref. 016-1512	Datum 84.674 m	Sheet 01 of 01	
Plant and Equipment Used RP Drilling Windowless Tracked Rig		Logged by MS		

Depth	Geology	Description	Elevation	Well Installation	Water	Sample No.	Lab Analysis	PID Readings
								0 50 100 150 200
0.0		Loose brown topsoil MADE GROUND with gravel/flint, rootlets (grass), dry, no odour	0.0-0.3			WS06 Soil 0.3-0.6m	Suite B ASB VOC SVOC PCB	2.1 ppm
0.5		Black ash MADE GROUND with gravel, dry, no odour	0.3-0.6					
1.0		Firm black/dark brown/grey CLAY with flints, dry, no odour	0.6-1.0					
1.5		Firm light brown/orange sandy CLAY with gravel and flint, dry, no odour	1.0-2.1			WS06 Soil 1.5-1.8m	Suite B ASB VOC SVOC	0.3 ppm
2.0	flint layer 1.9-2.1 m bgl						
2.5								
3.0								
3.5								
4.0								
4.5								
5.0								

Remarks

Grassed area near to PW Gates access road – northern end.
End @ 2.1 m CLAY.
No water encountered during drilling.



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Project Wheat Quarter (Shredded Wheat Development), WGC, Northern Site		Date Start: 26/06/18 Finish: 26/06/18	Co-ordinates 5241 49.315 21 3028.756	Reference WS07 -18
Client Wheat Quarter Limited	Project Ref. 016-1512	Datum 85.081 m	Sheet 01 of 01	
Plant and Equipment Used RP Drilling Windowless Tracked Rig		Logged by MS		

Depth	Geology	Description	Elevation	Well Installation	Water	Sample No.	Lab Analysis	PID Readings
0.0								0 50 100 150 200
0.5		Broken concrete fragments MADE GROUND, dry, no odour	0.0-0.4					
1.0		Loose brown sand with gravel, red brick and concrete MADE GROUND, dry, no odour (poor recovery)				WS07 Soil 0.7-1.0m	Suite B ASB VOC SVOC	5.2 ppm
1.5								
2.0								
2.5								
3.0		...wet gravel 3.0 – 3.5m (no odour or sheen on water)						
3.5			0.4-3.5			WS07 Soil 3.5-3.8m	Suite B ASB VOC SVOC PCB	22.5 ppm
4.0		Firm to stiff dark brown/grey CLAY with flints, dry, diesel type odour						
4.5		...reducing diesel type odour				WS07 Soil 4.6-4.8m		7.3 ppm
5.0			3.5-4.8					

Remarks

Adjacent to 11kV substation in area of historic ASTs. Location cased due to unstable ground.
Well excavated twice due to ground conditions. End @ 4.8 m CLAY.
Wet gravels encountered during drilling.

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Project Wheat Quarter (Shredded Wheat Development), WGC, Northern Site		Date Start: 26/06/18 Finish: 26/06/18	Co-ordinates 524180.923 212988.054	Reference WS08-18
Client Wheat Quarter Limited	Project Ref. 016-1512	Datum 83.957 m	Sheet 01 of 01	
Plant and Equipment Used RP Drilling Windowless Tracked Rig		Logged by MS		

Depth	Geology	Description	Elevation	Well Installation	Water	Sample No.	Lab Analysis	PID Readings
0.0								0 50 100 150 200
0.5								
1.0		Compact orange/brown sandy clay gravel and flints MADE GROUND, dry, no odour	0.0-1.1			WS08 Soil 0.8-1.0m	Suite B ASB VOC SVOC SOM PCB	1.7 ppm
1.5								
2.0								
2.5								
3.0		Firm to stiff orange/brown silty sandy CLAY with isolated flints and occasional flint layers, gravel, dry, no odour	1.1-3.2			WS08 Soil 2.0-2.2m	Suite B ASB VOC SVOC	2.5 ppm
3.5								
4.0								
4.5		Stiff orange/brown silty sandy CLAY with occasional flints and gravel, dry, no odour	3.2-5.0			WS08 Soil 4.4-4.7m		2.5 ppm
5.0								

Remarks

Near edge of Grade II listed building.
End @ 5.0 m CLAY.
No water encountered during drilling.



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Project Wheat Quarter (Shredded Wheat Development), WGC, Northern Site		Date Start: 26/06/18 Finish: 26/06/18	Co-ordinates 5241 63.897 21 2944.531	Reference WS09 -18
Client Wheat Quarter Limited	Project Ref. 016-1512	Datum 83.947 m	Sheet 01 of 01	
Plant and Equipment Used RP Drilling Windowless Tracked Rig		Logged by MS		

Depth	Geology	Description	Elevation	Well Installation	Water	Sample No.	Lab Analysis	PID Readings
0.0								0 50 100 150 200
0.5						WS09 Soil 0.5-0.8m	Suite B ASB VOC SVOC	1.3 ppm
1.0								
1.5		Compact brown sandy clay gravel with flints MADE GROUND, dry, no odour	0.0-1.5					
1.6			1.5-1.6			WS09 Soil 1.6-1.8m	Suite B ASB VOC SVOC	3.1 ppm
2.0		Large flint fragments						
2.5		Firm to stiff brown/dark grey sandy CLAY with isolated flints , gravel and small chalk fragments, dry, no odour				WS09 Soil 2.2-2.5m		2.7 ppm
3.0	becoming stiffer						
3.5								
4.0			1.6-4.0					
4.5								
5.0								

Remarks

Near edge of Grade II listed building.
End @ 4.0 m CLAY.
No water encountered during drilling.



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Project Wheat Quarter (Shredded Wheat Development), WGC, Northern Site		Date Start: 26/06/18 Finish: 26/06/18	Co-ordinates 524167.353 212912.194	Reference WS10 -18
Client Wheat Quarter Limited	Project Ref. 016-1512	Datum 85.194 m	Sheet 01 of 01	
Plant and Equipment Used RP Drilling Windowless Tracked Rig		Logged by MS		

Depth	Geology	Description	Elevation	Well Installation	Water	Sample No.	Lab Analysis	PID Readings
0.0								0 50 100 150 200
0.5						WS010 Soil 1.2-1.5m	Suite B ASB VOC SVOC	5.3 ppm
1.0								
1.5								
2.0								
2.5		Compact orange/brown sandy clay gravel with flints, concrete fragments MADE GROUND, dry, no odour	0.0-2.5					
3.0						WS010 Soil 3.0-3.5m	Suite B ASB VOC SVOC	3.1 ppm
3.5		Compact orange/brown clayey sandy gravel with flints, slightly damp, no odour	2.5-3.8					
4.0		Very stiff orange/brown CLAY with small flints, dry, no odour	3.8-4.0					
4.5								
5.0								

Remarks

Middle of demolished silos.
End @ 4.0 m CLAY. Poor recovery 1.0-2.0m bgl.
No water encountered during drilling.



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Project Wheat Quarter (Shredded Wheat Development), WGC, Northern Site		Date Start: 26/06/18 Finish: 26/06/18	Co-ordinates 524191.746 212880.509	Reference WS11 -18
Client Wheat Quarter Limited	Project Ref. 016-1512	Datum 85.683 m	Sheet 01 of 01	
Plant and Equipment Used RP Drilling Windowless Tracked Rig		Logged by MS		

Depth	Geology	Description	Elevation	Well Installation	Water	Sample No.	Lab Analysis	PID Readings
								0 50 100 150 200
0.0		Compact brown sandy clay gravel with flints, concrete fragments MADE GROUND, dry, no odour	0.0-0.2					
			0.2-0.3					
0.5		Loose black ash, dry, no odour				WS011 Soil 0.8-1.0m	Suite B ASB VOC SVOC	1.9 ppm
1.0								
1.5		Compact orange/brown sandy clay gravel with flints MADE GROUND, dry, no odour	0.3-1.8					
2.0						WS011 Soil 2.2-2.5m	Suite B ASB VOC SVOC	2.5 ppm
2.5								
3.0		Firm orange/brown sandy CLAY with isolated flints , gravel, dry, no odour	1.8-3.1					
3.5								
4.0		Compact orange/brown clayey sandy gravel with flints, dry, no odour	3.1-4.0					
4.5						WS011 Soil 4.4-4.8m		1.4 ppm
5.0		Firm to stiff dark brown/grey CLAY with flints, dry, no odour	4.0-5.0					

Remarks

Near to Hydeway fence line.
End @ 5.0 m CLAY.
No water encountered during drilling.



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Project Wheat Quarter (Shredded Wheat Development), WGC, Northern Site		Date Start: 26/06/18 Finish: 26/06/18	Co-ordinates 524234.490 212877.197	Reference WS12 -18
Client Wheat Quarter Limited	Project Ref. 016-1512	Datum 83.938 m	Sheet 01 of 01	
Plant and Equipment Used RP Drilling Windowless Tracked Rig		Logged by MS		

Depth	Geology	Description	Elevation	Well Installation	Water	Sample No.	Lab Analysis	PID Readings
0.0								0 50 100 150 200
0.5						WS012 Soil 0.8-1.0m	Suite B ASB VOC SVOC SOM	5.7 ppm
1.0								
1.5		Concrete and red brick fragments, MADE GROUND, dry, no odour	0.0-1.5					
2.0								
2.5		Compact brown sandy clay gravel with flints MADE GROUND, dry, no odourpoor recovery	1.5-2.8			WS012 Soil 2.5-2.8m	Suite B ASB VOC SVOC	3.4 ppm
3.0								
3.5								
4.0								
4.5								
5.0								

Remarks

Near to Broadwater Road and Hydeway junction.
End @ 2.8 m Sandy Gravel. Poor recovery after 2.0 m bgl.
No water encountered during drilling.



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Project		Date	Co-ordinates	Reference
Wheat Quarter (Shredded Wheat Development), WGC, Northern Site		Start: 26/06/18	524207.105	WS13 -18
		Finish: 26/06/18	21 2915.244	
Client	Project Ref.	Datum	Sheet	
Wheat Quarter Limited	016-1512	83.161 m	01 of 01	
Plant and Equipment Used		Logged by		
RP Drilling Windowless Tracked Rig		MS		

Depth	Geology	Description	Elevation	Well Installation	Water	Sample No.	Lab Analysis	PID Readings
								050100150200
0.0								
0.5						WS013 Soil 0.7-0.9m	Suite B ASB VOC SVOC PCB	1.0 ppm
1.0								
1.5		Compact brown/orange sandy clay gravel with flints and red brick MADE GROUND, dry, no odour	0.0-1.9					
2.0						WS013 Soil 1.9-2.2m	Suite B ASB VOC SVOC	0.7 ppm
2.5								
3.0		Very stiff brown/orange CLAY with isolated flints and gravel, dry, no odour	1.9-3.2					
3.5								
4.0								
4.5								
5.0								

Remarks

Area where UST was removed.
End @ 3.0 m CLAY (flint obstruction).
No water encountered during drilling.

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Project Wheat Quarter (Shredded Wheat Development), WGC, Northern Site		Date Start: 27/06/18 Finish: 27/06/18	Co-ordinates 524206.158 21 2947.845	Reference WS14 -18
Client Wheat Quarter Limited	Project Ref. 016-1512	Datum 83.972 m	Sheet 01 of 01	
Plant and Equipment Used RP Drilling Windowless Tracked Rig		Logged by MS		

Depth	Geology	Description	Elevation	Well Installation	Water	Sample No.	Lab Analysis	PID Readings
								0 50 100 150 200
0.0		Compact brown/orange sandy clay gravel with lots of flints MADE GROUND, dry, no odour sandy layers	0.0-2.0			WS014 Soil 0.8-1.0m	Suite B ASB VOC SVOC SOM	1.3 ppm
0.5								
1.0								
1.5								
2.0								
2.5		Firm to stiff (becoming stiffer) brown/orange CLAY with black patches, flints and gravel, dry, no odour	2.0-4.0			WS014 Soil 2.2-2.5m	Suite B ASB VOC SVOC	0.3 ppm
3.0								
3.5								
4.0								
4.5								
5.0								

Remarks

Near to centre of now demolished Shredded Wheat factory.
End @ 4.0 m CLAY – flint obstruction.
No water encountered during drilling.



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Project Wheat Quarter (Shredded Wheat Development), WGC, Northern Site		Date Start: 27/06/18 Finish: 27/06/18	Co-ordinates 524259.168 21 2970.482	Reference WS15 -18
Client Wheat Quarter Limited	Project Ref. 016-1512	Datum 83.997 m	Sheet 01 of 01	
Plant and Equipment Used RP Drilling Windowless Tracked Rig		Logged by MS		

Depth	Geology	Description	Elevation	Well Installation	Water	Sample No.	Lab Analysis	PID Readings
								0 50 100 150 200
0.0		Compact light brown/orange sandy clay gravel with flints MADE GROUND, dry, no odour						
0.5						WS015 Soil 0.5-0.8m	Suite B ASB VOC SVOC SOM	0.3 ppm
1.0	large red brick fragments						
1.5			0.0-1.5					
2.0		Firm brown/orange clayey sandy gravel with flints, damp to wet, no odour						
2.5						WS015 Soil 1.5-1.8m	Suite B ASB VOC SVOC SOM	1.9 ppm
3.0			1.5-2.1					
3.5								
4.0		Firm to stiff brown/dark grey/ orange sandy CLAY with isolated flints , gravel and small chalk fragments, dry, no odour						
4.5								
5.0			2.1-4.0					

Remarks

Near to eastern edge of site with Broadwater Road.
End @ 4.0 m CLAY.
No water encountered during drilling.



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Project Wheat Quarter (Shredded Wheat Development), WGC, Northern Site		Date Start: 27/06/18 Finish: 27/06/18	Co-ordinates 524249.497 213009.934	Reference WS16 -18
Client Wheat Quarter Limited	Project Ref. 016-1512	Datum 83.907 m	Sheet 01 of 01	
Plant and Equipment Used RP Drilling Windowless Tracked Rig		Logged by MS		

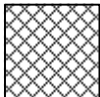



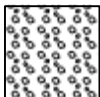



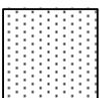



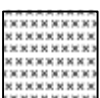






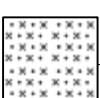

Depth	Geology	Description	Elevation	Well Installation	Water	Sample No.	Lab Analysis	PID Readings
0.0								0 50 100 150 200
0.5						WS016 Soil 0.6-0.9m	Suite B ASB VOC SVOC	2.5 ppm
1.0		Compact light brown/orange (becoming darker) sandy clay with black patches, gravel with flints MADE GROUND, dry, no odour	0.0-1.5			WS016 Soil 1.3-1.5m	Suite B ASB VOC SVOC	2.2 ppm
1.5								
2.0		Firm to stiff brown/orange sandy CLAY with isolated flints , gravel, dry, no odour						
2.5	as above now with small chalk fragments						
3.0	from 3.0m very poor recovery						
3.5								
4.0								
4.5								
5.0			1.5-5.0					

Remarks

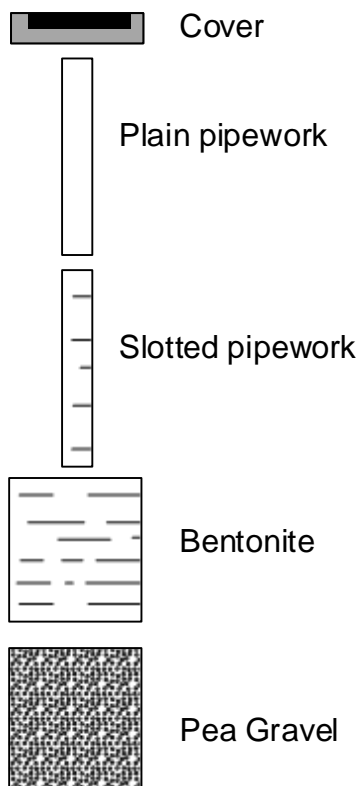
Near to northern edge of site with Bridge Road.
End @ 5.0 m CLAY.
No water encountered during drilling.



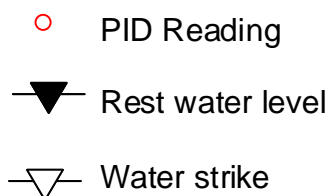
Note: These logs are based on driller/environmental observations and are logged generally in accordance with BS 5930:2015 Code of practice for site investigations. These field observations should not be used for design and/or engineering purposes.

Soils	Sedimentary	Metamorphic	Igneous
 Made Ground	 Chalk	 Coarse grained	 Coarse grained
 Gravel	 Limestone	 Medium grained	 Medium grained
 Sand	 Sandstone	 Fine grained	 Fine grained
 Silt	 Siltstone	 Pyroclastic	
 Clay	 Mudstone		
 Peat	 Shale		
 Silty Sand	 Coal		

Well Installation



Monitoring



Laboratory Analysis

Suite B – Arsenic (dissolved), Cadmium (dissolved), Chromium (dissolved), Lead (dissolved), Mercury (dissolved), Selenium (dissolved), Copper (dissolved), Nickel (dissolved), Zinc (dissolved), Vanadium (dissolved), Beryllium (dissolved), Water Soluble Boron, Total Cyanide, Monohydric Phenols, pH Value, TPH - CWG (C5-35) Aliphatic/Aromatic Split (with CWG banding - Ali C5-6,>6-8,>8-10,>10-12,>12-16,>16-21,>21-35) (Aro - >C6-7,>7-8,>8-10,>C10-12,>12-16,>16-21,>21-35) Speciated PAHs (USEPA-16), Sulphate (water soluble).

Cr (VI) – Chromium (Hexavalent)

VOC – Volatile Organic Compounds

SVOC – Semi-Volatile Organic Compounds

SOM – Soil Organic Matter

ASB – Asbestos

OPP – Organophosphorus Pesticides (OPP)

OCP – Organochlorine Pesticides (OCP)

Tri Herb. – Triazine Herbicides

Delta-Simons 3 Henley Office Park, Doddington Road, Lincoln, LN6 3QR Tel: +44 (0) 870 0400 012 Fax: +44 (0) 1522 698393 Email: info@deltasimons.com									
Project: Broadwater Road, Welwyn Garden City				Project No: 2342.18		Hole ID: BH408			
CABLE PERCUSSION BOREHOLE LOG				Date From / To: 15/10/2014 - 16/10/2014		Client: Spen Hill Developments Ltd			

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results	Backfill Details									
					TYPE	REF	Depth	SPT N Value/Drive mm										
MADE GROUND: Concrete.				85.23 0.40	D	1	0.50											
(0.60)																		
84.63 1.00																		
MADE GROUND: Brown slightly sandy slightly gravelly clay. Gravel is subangular to subrounded fine to coarse flint and brick. Sand is fine to coarse.					D	2	1.00											
Stiff orange brown slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse flint. Sand is fine to coarse.(LOWESTOFT FORMATION)														D	3	1.50 - 2.00 1.50 - 1.95	CPT N=15 2,3/4,4,3,4	
Loose to medium dense orange brown sandy angular to subrounded fine to coarse flint GRAVEL. Sand is medium to coarse. Occasional flint cobbles.(KESGRAVE CATCHMENT SUBGROUP)					D	4	3.50 - 4.00 3.50 - 3.95	CPT N=13 2,3/2,3,4,4										
										Loose to medium dense orange brown sandy angular to subrounded fine to coarse flint GRAVEL. Sand is medium to coarse. Occasional flint cobbles.(KESGRAVE CATCHMENT SUBGROUP)					U	2	4.50 - 4.95	U=40/383mm
Loose to medium dense orange brown sandy angular to subrounded fine to coarse flint GRAVEL. Sand is medium to coarse. Occasional flint cobbles.(KESGRAVE CATCHMENT SUBGROUP)					D	5	5.00	SPT N=25 2,3/4,6,6,9										
										Loose to medium dense orange brown sandy angular to subrounded fine to coarse flint GRAVEL. Sand is medium to coarse. Occasional flint cobbles.(KESGRAVE CATCHMENT SUBGROUP)					B	2	6.40	CPT N=8 2,2/2,2,2,2
Loose to medium dense orange brown sandy angular to subrounded fine to coarse flint GRAVEL. Sand is medium to coarse. Occasional flint cobbles.(KESGRAVE CATCHMENT SUBGROUP)					D	7	7.50 - 8.00 7.50 - 7.95	CPT N=17 2,3/4,4,4,5										
										Loose to medium dense orange brown sandy angular to subrounded fine to coarse flint GRAVEL. Sand is medium to coarse. Occasional flint cobbles.(KESGRAVE CATCHMENT SUBGROUP)					D	8	9.00 - 9.50 9.00 - 9.45	CPT N=17 2,3/4,4,4,5

REMARKS : 1. Engineer verified logged in general accordance to BS 5930:2010. 2. Area CAT scanned prior to excavation. 3. Borehole remained dry on completion. 4. Installed with HDPE standpipe to 20.00m bgl. 5. Coordinates estimated due to no GPS signal.		CHISELLING			WATER LEVEL OBSERVATIONS				
		Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth
		NO CHISELLING UNDERTAKEN:			NO WATER ENCOUNTERED:				
		BOREHOLE DIAMETER			CASING DIAMETER		DEPTH SEALED		
		150mm to 20.00m			150mm to 14.90m				

All measurements in metres unless otherwise stated	10m/page Scale: 1:62.50	Coordinates to National Grid Ground Level to Ordnance Datum	Page 1 of 3
Plant Used: Dando 2000	Coordinates / Level (mAOD): E: 524161 N: 212906 Level: 85.63	Logged By: WC	Checked By: WC Approved By: SS

Delta-Simons 3 Henley Office Park, Doddington Road, Lincoln, LN6 3QR Tel: +44 (0) 870 0400 012 Fax: +44 (0) 1522 698393 Email: info@deltasimons.com												
Project: Broadwater Road, Welwyn Garden City				Project No: 2342.18		Hole ID: BH408						
CABLE PERCUSSION BOREHOLE LOG				Date From / To: 15/10/2014 - 16/10/2014		Client: Spen Hill Developments Ltd						
DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results	Backfill Details			
					TYPE	REF	Depth	SPT N Value/Drive mm				
Loose to medium dense orange brown sandy angular to subrounded fine to coarse flint GRAVEL. Sand is medium to coarse. Occasional flint cobbles.(KESGRAVE CATCHMENT SUBGROUP)(BH Continued)				(8.50)	D	9	10.50 - 11.00 10.50 - 10.95	CPT N=20 3,4/4,5,5,6				
					D	10	12.00 - 12.50 12.00 - 12.45	CPT N=23 4,4/5,5,6,7				
					D	11	13.50 - 14.00 13.50 - 13.95	CPT N=17 3,4/4,5,4,4				
Recovered as structureless CHALK composed of cream with rare orange veins sandy gravelly silt. Gravel is angular to subangular fine to medium extremely weak low density cream. Sand is fine to coarse. Rare subrounded coarse gravels and cobbles of rinded flint throughout. Grade Dm. (LEWES NODULAR/SEAFORD CHALK FORMATION)			14.90	70.73 14.90	B	3	14.90	CPT N=3 1,0/1,0,2,0				
					D	12	15.00 - 15.45 15.00 - 15.45					
					D	13	16.50 - 17.00 16.50 - 16.95			SPT N=7 1,1/1,2,2,2		
					D	14	18.00 - 18.50 18.00 - 18.45			SPT N=10 1,1/2,2,3,3		
					D	15	19.50 - 20.00 19.50 - 19.95	SPT N=8 2,3/2,2,2,2				
			65.63	20.00								
REMARKS : 1. Engineer verified logged in general accordance to BS 5930:2010. 2. Area CAT scanned prior to excavation. 3. Borehole remained dry on completion. 4. Installed with HDPE standpipe to 20.00m bgl. 5. Coordinates estimated due to no GPS signal.					CHISELLING			WATER LEVEL OBSERVATIONS				
					Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth
					NO CHISELLING UNDERTAKEN:			NO WATER ENCOUNTERED:				
					BOREHOLE DIAMETER			CASING DIAMETER		DEPTH SEALED		
					150mm to 20.00m			150mm to 14.90m				
All measurements in metres unless otherwise stated		10m/page Scale: 1:62.50		Coordinates to National Grid Ground Level to Ordnance Datum				Page 2 of 3				
Plant Used: Dando 2000		Coordinates / Level (mAOD): E: 524161 N: 212906 Level: 85.63		Logged By: WC		Checked By: WC		Approved By: SS				

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Project: **Broadwater Road, Welwyn Garden City** Project No: **2342.18** Hole ID: **BH408**

CABLE PERCUSSION BOREHOLE LOG

Date From / To:
15/10/2014 - 16/10/2014

Client:
Spen Hill Developments Ltd

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results		Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm		
Borehole complete at 20.00m bgl.										

REMARKS :

1. Engineer verified logged in general accordance to BS 5930:2010.
2. Area CAT scanned prior to excavation.
3. Borehole remained dry on completion.
4. Installed with HDPE standpipe to 20.00m bgl.
5. Coordinates estimated due to no GPS signal.

CHISELLING			WATER LEVEL OBSERVATIONS				
Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth
NO CHISELLING UNDERTAKEN:			NO WATER ENCOUNTERED:				
BOREHOLE DIAMETER			CASING DIAMETER			DEPTH SEALED	
150mm to 20.00m			150mm to 14.90m				
Coordinates to National Grid Ground Level to Ordnance Datum						Page 3 of 3	
Logged By: WC			Checked By: WC			Approved By: SS	

All measurements in metres
 unless otherwise stated

10m/page Scale: 1:62.50

Coordinates to National Grid
 Ground Level to Ordnance Datum

Page 3 of 3

Plant Used:
Dando 2000

Coordinates / Level (mAOD):
E: 524161 N: 212906
Level: 85.63

Logged By:
WC

Checked By:
WC

Approved By:
SS

Delta-Simons 3 Henley Office Park, Doddington Road, Lincoln, LN6 3QR Tel: +44 (0) 870 0400 012 Fax: +44 (0) 1522 698393 Email: info@deltasimons.com									
Project: Broadwater Road, Welwyn Garden City				Project No: 2342.18		Hole ID: BH409			
CABLE PERCUSSION BOREHOLE LOG				Date From / To: 10/10/2014 - 13/10/2014		Client: Spen Hill Developments Ltd			

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
MADE GROUND: Concrete.	XXXX			82.83 0.30					
Stiff orangey brown slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse flint. Sand is fine to coarse. Possibly reworked to 1.5 m bgl. (LOWESTOFT FORMATION)	XXXXXX			(2.90)	D	1	0.50	SPT N=5 1,0/1,0,2,2	XXXXXX
					D	2	1.00		
					D	3	1.50 - 1.95 1.50 - 1.95		
					U	1	2.50 - 2.95	U=50/383mm	
Vey to medium dense orange brown gravelly fine to coarse SAND. Gravel is subangular to rounded fine to coarse flint. (KESGRAVE CATCHMENT SUBGROUP)	XXXXXX			(150mm)	D	4	3.00	CPT N=12 1,2/2,3,3,4	XXXXXX
					B	1	3.20		
					D	5	3.50 - 4.00 3.50 - 3.95		
					D	6	4.50 - 5.00 4.50 - 4.95		
	XXXXXX			(5.20)	D	7	6.00 - 6.50 6.00 - 6.45	CPT N=32 4,6/7,7,9,9	XXXXXX
					D	8	7.50 - 8.00 7.50 - 7.95	CPT N=36 5,7/8,8,10,10	
					B	2	8.40		
					D	9	9.00 - 9.50 9.00 - 9.45	SPT N=5 2,3/2,1,1,1	
Recovered as structureless CHALK composed of cream with rare orange veins slightly gravelly silt. Gravel is angular to subangular fine to medium extremely to very weak low to medium density cream. Rare subrounded coarse rinded flint gravel throughout grade Dm. (LEWES NODULAR/SEAFORD CHALK FORMATION)	XXXXXX			8.40 74.73 8.40					

REMARKS : 1. Engineer verified logged in general accordance to BS 5930:2010. 2. Area CAT scanned prior to excavation. 3. Borehole remained dry on completion. 4. Installed with HDPE standpipe to 20.00m bgl. 5. Coordinates estimated due to no GPS signal.				CHISELLING			WATER LEVEL OBSERVATIONS				
				Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth
				NO CHISELLING UNDERTAKEN:			NO WATER ENCOUNTERED:				
				BOREHOLE DIAMETER			CASING DIAMETER		DEPTH SEALED		
				150mm to 20.00m			150mm to 8.40m				

All measurements in metres unless otherwise stated		10m/page Scale: 1:62.50	Coordinates to National Grid Ground Level to Ordnance Datum		Page 1 of 3
Plant Used: Dando 2000	Coordinates / Level (mAOD): E: 524255 N: 212891 Level: 83.13		Logged By: WC	Checked By: WC	Approved By: SS

Delta-Simons 3 Henley Office Park, Doddington Road, Lincoln, LN6 3QR Tel: +44 (0) 870 0400 012 Fax: +44 (0) 1522 698393 Email: info@deltasimons.com									
Project: Broadwater Road, Welwyn Garden City				Project No: 2342.18		Hole ID: BH409			
CABLE PERCUSSION BOREHOLE LOG				Date From / To: 10/10/2014 - 13/10/2014		Client: Spen Hill Developments Ltd			

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
Recovered as structureless CHALK composed of cream with rare orange veins slightly gravelly silt. Gravel is angular to subangular fine to medium extremely to very weak low to medium density cream. Rare subrounded coarse rinded flint gravel throughout grade Dm. (LEWES NODULAR/SEAFORD CHALK FORMATION)(BH Continued)				(11.60)	D	10	10.50 - 11.00 10.50 - 10.95	SPT N=8 2,2/3,3,1,1	
					D	11	12.00 - 12.50 12.00 - 12.45	SPT N=13 2,3/4,3,3,3	
					D	12	13.50 - 14.00 13.50 - 13.95	SPT N=15 2,3/4,4,4,3	
					D	13	15.00 - 15.50 15.00 - 15.45	SPT N=16 3,3/4,4,4,4	
					D	14	16.50 - 17.00 16.50 - 16.95	SPT N=19 3,4/4,5,5,5	
					D	15	18.00 - 18.50 18.00 - 18.45	SPT N=15 3,4/4,3,4,4	
				63.13 20.00	D	16	19.50 - 20.00 19.50 - 19.95	SPT N=19 3,4/5,5,5,4	

REMARKS : 1. Engineer verified logged in general accordance to BS 5930:2010. 2. Area CAT scanned prior to excavation. 3. Borehole remained dry on completion. 4. Installed with HDPE standpipe to 20.00m bgl. 5. Coordinates estimated due to no GPS signal.	CHISELLING			WATER LEVEL OBSERVATIONS				
	Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth
	NO CHISELLING UNDERTAKEN:			NO WATER ENCOUNTERED:				
	BOREHOLE DIAMETER			CASING DIAMETER		DEPTH SEALED		
	150mm to 20.00m			150mm to 8.40m				

All measurements in metres unless otherwise stated	10m/page Scale: 1:62.50	Coordinates to National Grid Ground Level to Ordnance Datum	Page 2 of 3
Plant Used: Dando 2000	Coordinates / Level (mAOD): E: 524255 N: 212891 Level: 83.13	Logged By: WC	Checked By: WC Approved By: SS

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Project: **Broadwater Road, Welwyn Garden City** Project No: **2342.18** Hole ID: **BH409**

CABLE PERCUSSION BOREHOLE LOG

Date From / To:
 10/10/2014 - 13/10/2014

Client:
Spen Hill Developments Ltd

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results		Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm		
Borehole complete at 20.00m bgl.										

REMARKS :

1. Engineer verified logged in general accordance to BS 5930:2010.
2. Area CAT scanned prior to excavation.
3. Borehole remained dry on completion.
4. Installed with HDPE standpipe to 20.00m bgl.
5. Coordinates estimated due to no GPS signal.

CHISELLING			WATER LEVEL OBSERVATIONS					
Depth From	Depth To	Time Taken		Date	Time	Water Strike	Standing Level	Casing Depth
NO CHISELLING UNDERTAKEN:						NO WATER ENCOUNTERED:		
BOREHOLE DIAMETER			CASING DIAMETER			DEPTH SEALED		
150mm to 20.00m			150mm to 8.40m					

All measurements in metres unless otherwise stated	10m/page Scale: 1:62.50	Coordinates to National Grid Ground Level to Ordnance Datum			Page 3 of 3	
Plant Used: Dando 2000	Coordinates / Level (mAOD): E: 524255 N: 212891 Level: 83.13	Logged By: WC		Checked By: WC		Approved By: SS

Delta-Simons 3 Henley Office Park, Doddington Road, Lincoln, LN6 3QR Tel: +44 (0) 870 0400 012 Fax: +44 (0) 1522 698393 Email: info@deltasimons.com									
Project: Broadwater Road, Welwyn Garden City				Project No: 2342.18		Hole ID: BH410			
CABLE PERCUSSION BOREHOLE LOG				Date From / To: 16/10/2014 - 20/10/2014		Client: Spen Hill Developments Ltd			

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results	Backfill Details																									
					TYPE	REF	Depth	SPT N Value/Drive mm																										
MADE GROUND: Asphalt.				84.79 0.15																														
MADE GROUND: Brown sandy clayey gravel. Gravel is angular to rounded fine to coarse of mixed lithologies including brick, concrete and flint. Sand is fine to coarse. Frequent brick cobbles.				84.49 0.45	D	1	0.50																											
Stiff orangey brown sandy gravelly CLAY. Gravel is angular to subrounded fine to coarse flint. Sand is fine to coarse. Rare flint cobbles. (LOWESTOFT FORMATION)				(4.65)	D	2	1.00																											
					D	3	1.50 - 2.00 1.50 - 1.95	CPT N=15 2,2/3,3,4,5																										
					D	4	2.50 - 3.00 2.50 - 2.95	CPT N=20 2,3/4,5,5,6																										
					D	5	3.50 - 4.00 3.50 - 3.95	CPT N=22 3,3/4,4,7,7																										
Stiff orangey brown slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse flint. Sand is fine to coarse. (LOWESTOFT FORMATION)				79.84 5.10	B	1	5.10																											
Medium dense to dense orangey brown slightly sandy angular to subrounded fine to coarse flint GRAVEL. Sand is fine to coarse. Occasional flint cobbles. (KESGRAVE CATCHMENT SUBGROUP)			(150mm)	(0.80)	B	2	6.00 - 6.50 6.00 - 6.45	CPT N=19 3,4/4,4,5,6																										
					D	7	7.50 - 8.00 7.50 - 7.95	CPT N=29 4,5/6,6,7,10																										
					D	8	9.00 - 9.50 9.00 - 9.45	CPT N=31 4,6/7,7,8,9																										
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> REMARKS : 1. Engineer verified logged in general accordance to BS 5930:2010. 2. Area CAT scanned prior to excavation. 3. Groundwater encountered at 22.35m bgl. 4. Installed with HDPE standpipe to 25.00m bgl. </div> <div style="width: 50%;"> <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3">CHISELLING</th> <th colspan="6">WATER LEVEL OBSERVATIONS</th> </tr> <tr> <th>Depth From</th> <th>Depth To</th> <th>Time Taken</th> <th>Date</th> <th>Time</th> <th>Water Strike</th> <th>Standing Level</th> <th>Casing Depth</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td>1</td> <td>20-10-14</td> <td></td> <td>22.35</td> <td></td> </tr> </tbody> </table> </div> </div>										CHISELLING			WATER LEVEL OBSERVATIONS						Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth				1	20-10-14		22.35	
CHISELLING			WATER LEVEL OBSERVATIONS																															
Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth																											
			1	20-10-14		22.35																												
			BOREHOLE DIAMETER		CASING DIAMETER		DEPTH SEALED																											
			150mm to 25.00m		150mm to 11.70m																													

All measurements in metres unless otherwise stated		10m/page Scale: 1:62.50	Coordinates to National Grid Ground Level to Ordnance Datum		Page 1 of 3
Plant Used: Dando 2000	Coordinates / Level (mAOD): E: 524279.09 N: 212972.11 Level: 84.94		Logged By: WC	Checked By: WC	Approved By: SS

Delta-Simons 3 Henley Office Park, Doddington Road, Lincoln, LN6 3QR Tel: +44 (0) 870 0400 012 Fax: +44 (0) 1522 698393 Email: info@deltasimons.com												
Project: Broadwater Road, Welwyn Garden City				Project No: 2342.18		Hole ID: BH410						
CABLE PERCUSSION BOREHOLE LOG				Date From / To: 16/10/2014 - 20/10/2014		Client: Spen Hill Developments Ltd						
DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results	Backfill Details			
					TYPE	REF	Depth	SPT N Value/Drive mm				
Medium dense to dense orangey brown slightly sandy angular to subrounded fine to coarse flint GRAVEL. Sand is fine to coarse. Occasional flint cobbles. (KESGRAVE CATCHMENT SUBGROUP) (BH Continued)			11.70	73.24 11.70	D	9	10.50 - 11.00 10.50 - 10.95	CPT N=31 4,6/7,7,8,9				
Recovered as structureless CHALK composed of cream with rare orange veins slightly gravelly silt. Gravel is angular to subangular fine to medium extremely weak low density cream. Rare subrounded coarse gravels and cobbles of rinded flint throughout grade Dm. (LEWES NODULAR/SEAFORD CHALK FORMATION)					B	3	11.70					
					D	10	12.00 - 12.50 12.00 - 12.45	SPT N=2 1,1/0,1,1,0				
					D	11	13.50 - 14.00 13.50 - 13.95	SPT N=5 1,1/2,1,1,1				
					D	12	15.00 - 15.50 15.00 - 15.45	SPT N=7 1,2/2,1,2,2				
					D	13	16.50 - 17.00 16.50 - 16.95	SPT N=8 2,2/2,2,2,2				
				D	14	18.00 - 18.50 18.00 - 18.45	SPT N=13 2,2/3,3,3,4					
				D	15	19.50 - 20.00 19.50 - 19.95	SPT N=16 3,4/3,3,4,6					
REMARKS : 1. Engineer verified logged in general accordance to BS 5930:2010. 2. Area CAT scanned prior to excavation. 3. Groundwater encountered at 22.35m bgl. 4. Installed with HDPE standpipe to 25.00m bgl.				CHISELLING			WATER LEVEL OBSERVATIONS					
				Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth	
				NO CHISELLING UNDERTAKEN:			1	20-10-14		22.35		
				BOREHOLE DIAMETER			CASING DIAMETER		DEPTH SEALED			
				150mm to 25.00m			150mm to 11.70m					
All measurements in metres unless otherwise stated		10m/page	Scale: 1:62.50		Coordinates to National Grid Ground Level to Ordnance Datum				Page 2 of 3			
Plant Used: Dando 2000		Coordinates / Level (mAOD): E: 524279.09 N: 212972.11 Level: 84.94			Logged By: WC		Checked By: WC		Approved By: SS			

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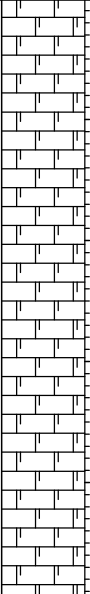

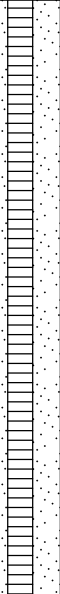


Project: **Broadwater Road, Welwyn Garden City** Project No: **2342.18** Hole ID: **BH410**

CABLE PERCUSSION BOREHOLE LOG

Date From / To:
 16/10/2014 - 20/10/2014

Client:
Spen Hill Developments Ltd

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
Recovered as structureless CHALK composed of cream with rare orange veins slightly gravelly silt. Gravel is angular to subangular fine to medium extremely weak low density cream. Rare subrounded coarse gravels and cobbles of rinded flint throughout grade Dm. (LEWES NODULAR/SEAFORD CHALK FORMATION)(BH Continued)					D	16	21.00 - 21.50 21.00 - 21.45	SPT N=26 4,4/6,6,6,8	
					D	17	22.50 - 23.00 22.50 - 22.95	SPT N=25 3,4/5,6,7,7	
					D	18	24.00 - 24.50 24.00 - 24.45	SPT N=34 1,0/6,7,14,7	
				59.94 25.00					
Borehole complete at 25.00m bgl.									

REMARKS :

1. Engineer verified logged in general accordance to BS 5930:2010.
2. Area CAT scanned prior to excavation.
3. Groundwater encountered at 22.35m bgl.
4. Installed with HDPE standpipe to 25.00m bgl.

CHISELLING			WATER LEVEL OBSERVATIONS					
Depth From	Depth To	Time Taken		Date	Time	Water Strike	Standing Level	Casing Depth
NO CHISELLING UNDERTAKEN:			1	20-10-14		22.35		
	BOREHOLE DIAMETER			CASING DIAMETER		DEPTH SEALED		
	150mm to 25.00m			150mm to 11.70m				
Coordinates to National Grid Ground Level to Ordnance Datum						Page 3 of 3		
Logged By:			Checked By:			Approved By:		
WC			WC			SS		

All measurements in metres
 unless otherwise stated

10m/page Scale: 1:62.50

Coordinates to National Grid
 Ground Level to Ordnance Datum

Page 3 of 3

Plant Used: Dando 2000	Coordinates / Level (mAOD): E: 524279.09 N: 212972.11 Level: 84.94	Logged By: WC	Checked By: WC	Approved By: SS
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Project: Broadwater Road, Welwyn Garden City				Project No: 2342.18		Hole ID: BH411			
CABLE PERCUSSION BOREHOLE LOG				Date From / To: 21/10/2014 - 22/10/2014		Client: Spen Hill Developments Ltd			

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
MADE GROUND: Asphalt.	[Cross-hatch pattern]			83.77 0.15					
MADE GROUND: Brown slightly sandy gravelly clay. Gravel is angular to subrounded fine to coarse brick and flint. Sand is fine to coarse. Rare brick cobbles.	[Cross-hatch pattern]			(1.05)	D	1	0.50		
				82.72 1.20	D	2	1.00		
Stiff brown slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse flint. Sand is fine to coarse. (LOWESTOFT FORMATION)	[Horizontal line pattern]				D	3	1.50 - 2.00 1.50 - 1.95	CPT N=8 2,1/2,2,2,2	
					D	4	2.50 - 3.00 2.50 - 2.95	CPT N=8 2,2/2,2,2,2	
					B U	1	3.50 - 4.00 3.50 - 3.95	U=35/0mm	
					D	5	4.50 - 5.00 4.50 - 4.95	SPT N=7 1,1/2,1,2,2	
				(8.10)					
					D	6	6.00 - 6.50 6.00 - 6.45	SPT N=7 1,0/1,2,2,2	
					D	7	7.50 - 8.00 7.50 - 7.95	SPT N=8 2,2/2,2,2,2	
					D	8	9.00 - 9.50 9.00 - 9.45	SPT N=20 1,2/2,4,7,7	
				74.62 9.30	B	2	9.30		
Very dense brown slightly clayey sandy angular to subrounded fine to coarse flint GRAVEL. Sand is fine to coarse. (KESGRAVE CATCHMENT SUBGROUP)	[Circular pattern]								

REMARKS : 1. Engineer verified logged in general accordance to BS 5930:2010. 2. Area CAT scanned prior to excavation. 3. Borehole remained dry on completion. 4. Installed with HDPE standpipe to 20.00m bgl.	CHISELLING			WATER LEVEL OBSERVATIONS				
	Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth
	NO CHISELLING UNDERTAKEN:			NO WATER ENCOUNTERED:				
BOREHOLE DIAMETER			CASING DIAMETER		DEPTH SEALED			
150mm to 20.00m			150mm to 11.50m					

All measurements in metres unless otherwise stated	10m/page Scale: 1:62.50	Coordinates to National Grid Ground Level to Ordnance Datum	Page 1 of 3
Plant Used: Dando 2000	Coordinates / Level (mAOD): E: 524170.02 N: 213045.29 Level: 83.92	Logged By: WC	Checked By: WC Approved By: SS

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Project: Broadwater Road, Welwyn Garden City				Project No: 2342.18		Hole ID: BH411			
CABLE PERCUSSION BOREHOLE LOG				Date From / To: 21/10/2014 - 22/10/2014		Client: Spen Hill Developments Ltd			

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
Very dense brown slightly clayey sandy angular to subrounded fine to coarse flint GRAVEL. Sand is fine to coarse. (KESGRAVE CATCHMENT SUBGROUP)(BH Continued)				(2.20)	D	9	10.50 - 11.00 10.50 - 10.95	CPT N=54/165mm (7,12/14,18,22/15mm)	
Recovered as structureless CHALK composed of cream with rare orange veins sandy very gravelly silt. Gravel is angular to subangular fine to medium extremely to very weak low to medium density cream. Sand is fine to coarse. Rare subrounded coarse gravels and cobbles of rounded flint throughout. Grade Dm. (LEWES NODULAR/ SEAFORD CHALK FORMATION)			11.50	72.42 11.50	B	3	11.50		
					D	10	12.00 - 12.50 12.00 - 12.45	SPT N=1 1,0/0,1,0,0	
					D	11	13.50 - 14.00 13.50 - 13.95	SPT N=4 1,0/1,1,1,1	
					D	12	15.00 - 15.50 15.00 - 15.45	SPT N=7 1,1/1,2,2,2	
					D	13	16.50 - 17.00 16.50 - 16.95	SPT N=5 2,1/2,2,1,0	
				(8.50)	D	14	18.00 - 18.50 18.00 - 18.45	SPT N=9 2,2/2,2,3	
					D	15	19.50 - 20.00 19.50 - 19.95	SPT N=11 2,2/2,3,3,3	
			63.92	20.00					

REMARKS :

- Engineer verified logged in general accordance to BS 5930:2010.
- Area CAT scanned prior to excavation.
- Borehole remained dry on completion.
- Installed with HDPE standpipe to 20.00m bgl.

CHISELLING			WATER LEVEL OBSERVATIONS				
Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth
NO CHISELLING UNDERTAKEN:			NO WATER ENCOUNTERED:				
BOREHOLE DIAMETER			CASING DIAMETER		DEPTH SEALED		
150mm to 20.00m			150mm to 11.50m				

All measurements in metres unless otherwise stated	10m/page Scale: 1:62.50	Coordinates to National Grid Ground Level to Ordnance Datum	Page 2 of 3
Plant Used: Dando 2000	Coordinates / Level (mAOD): E: 524170.02 N: 213045.29 Level: 83.92	Logged By: WC	Checked By: WC Approved By: SS

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Project: **Broadwater Road, Welwyn Garden City** Project No: **2342.18** Hole ID: **BH411**

CABLE PERCUSSION BOREHOLE LOG

Date From / To:
 21/10/2014 - 22/10/2014

Client:
Spen Hill Developments Ltd

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results		Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm		
Borehole complete at 20.00m bgl.										

REMARKS :

1. Engineer verified logged in general accordance to BS 5930:2010.
2. Area CAT scanned prior to excavation.
3. Borehole remained dry on completion.
4. Installed with HDPE standpipe to 20.00m bgl.

CHISELLING			WATER LEVEL OBSERVATIONS					
Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth	
NO CHISELLING UNDERTAKEN:			NO WATER ENCOUNTERED:					
BOREHOLE DIAMETER			CASING DIAMETER			DEPTH SEALED		
150mm to 20.00m			150mm to 11.50m					


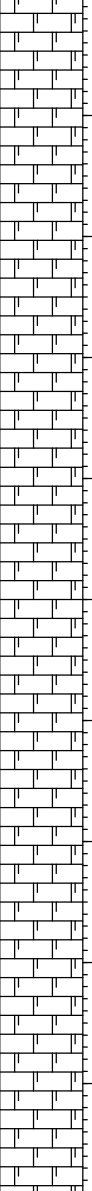
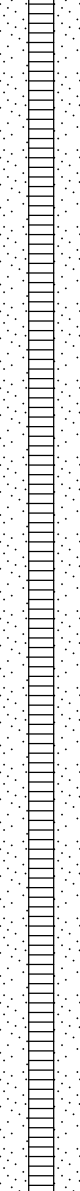
All measurements in metres unless otherwise stated	10m/page Scale: 1:62.50	Coordinates to National Grid Ground Level to Ordnance Datum			Page 3 of 3
Plant Used: Dando 2000	Coordinates / Level (mAOD): E: 524170.02 N: 213045.29 Level: 83.92	Logged By: WC		Checked By: WC	Approved By: SS

Delta-Simons 3 Henley Office Park, Doddington Road, Lincoln, LN6 3QR Tel: +44 (0) 870 0400 012 Fax: +44 (0) 1522 698393 Email: info@deltasimons.com									
Project: Broadwater Road, Welwyn Garden City				Project No: 2342.18		Hole ID: BH412			
CABLE PERCUSSION BOREHOLE LOG				Date From / To: 17/10/2014 - 20/10/2014		Client: Spen Hill Developments Ltd			

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
MADE GROUND: Asphalt.				84.75 0.10/ 84.45 0.40					
MADE GROUND: Reddy brown clayey sandy gravel. Gravel is angular to subangular fine to coarse brick. Sand is fine to coarse. Frequent brick cobbles.					D	1	0.50		
Stiff orangey brown slightly gravelly sandy CLAY. Gravel is angular to subrounded fine to coarse flint. Sand is fine to coarse. (LOWESTOFT FORMATION)				(1.90)	D	2	1.00		
					D	3	1.50 - 1.95 1.50 - 1.95	SPT N=13 1,1/2,3,4,4	
Dense brown clayey gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse flint. (LOWESTOFT FORMATION)				82.55 2.30 (1.10)	B	1	2.50 - 2.95 2.50 - 2.95	CPT N=33 3,5/7,8,9,9	
Stiff orangey brown slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse flint. Sand is fine to coarse. (LOWESTOFT FORMATION)				81.45 3.40 (1.30)	U	1	3.50 - 3.95	U=41/338mm	
					D	4	3.95 - 4.05		
					D	5	4.50 - 4.95 4.50 - 4.95	SPT N=48 4,5/8,10,14,16	
Very dense to dense orange brown gravelly fine to medium SAND. Gravel is angular to subrounded fine to coarse flint. (KESGRAVE CATCHMENT SUBGROUP)			(150mm)	80.15 4.70 (3.90)	B	2	6.00 - 6.45 6.00 - 6.45	CPT N=49 7,8/11,12,12,14	
					D	6	7.50 - 7.95 7.50 - 7.95	CPT N=50/85mm (11,14/30mm/41,9/10mm)	
				8.60 76.25 8.60					
Recovered as structureless CHALK composed of cream with rare orange veins slightly gravelly silt. Gravel is angular to subangular fine to medium extremely weak low density cream. Rare subrounded coarse gravels and cobbles of rinded flint throughout. Grade Dm. (LEWES NODULAR/ SEAFORD CHALK FORMATION)					D	7	9.00 - 9.45 9.00 - 9.45	SPT N=32 4,5/6,7,9,10	

REMARKS : 1. Engineer verified logged in general accordance to BS 5930:2010. 2. Area CAT scanned prior to excavation. 3. Borehole remained dry on completion. 4. Installed with HDPE standpipe to 20.00m bgl.	CHISELLING			WATER LEVEL OBSERVATIONS				
	Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth
	NO CHISELLING UNDERTAKEN:			NO WATER ENCOUNTERED:				
	BOREHOLE DIAMETER			CASING DIAMETER		DEPTH SEALED		
150mm to 20.00m			150mm to 8.60m					

All measurements in metres unless otherwise stated	10m/page Scale: 1:62.50	Coordinates to National Grid Ground Level to Ordnance Datum	Page 1 of 3
Plant Used: Dando 2000	Coordinates / Level (mAOD): E: 524118.88 N: 212945.31 Level: 84.85	Logged By: WC	Checked By: WC Approved By: SS

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Project: Broadwater Road, Welwyn Garden City				Project No: 2342.18		Hole ID: BH412						
CABLE PERCUSSION BOREHOLE LOG				Date From / To: 17/10/2014 - 20/10/2014		Client: Spen Hill Developments Ltd						
DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results	Backfill Details			
					TYPE	REF	Depth	SPT N Value/Drive mm				
Recovered as structureless CHALK composed of cream with rare orange veins slightly gravelly silt. Gravel is angular to subangular fine to medium extremely weak low density cream. Rare subrounded coarse gravels and cobbles of rinded flint throughout. Grade Dm. (LEWES NODULAR/ SEAFORD CHALK FORMATION)(BH Continued)				(11.40)	D	8	10.50 - 10.95 10.50 - 10.95	SPT N=34 4,5/7,7,9,11				
					D	9	12.00 - 12.45 12.00 - 12.45	SPT N=21 2,3/5,6,4,6				
					D	10	14.00					
					D	11	15.00 - 15.45 15.00 - 15.45	SPT N=27 3,2/3,6,10,8				
					D	12	16.50 - 16.95 16.50 - 16.95	SPT N=13 3,3/2,3,4,4				
					D	13	18.00 - 18.45 18.00 - 18.45	SPT N=50/235mm (4,7/13,15,17,5/10mm)				
					D	14	19.50 - 19.95 19.50 - 19.95	SPT N=41 3,6/9,10,10,12				
			64.85 20.00									
REMARKS : 1. Engineer verified logged in general accordance to BS 5930:2010. 2. Area CAT scanned prior to excavation. 3. Borehole remained dry on completion. 4. Installed with HDPE standpipe to 20.00m bgl.					CHISELLING			WATER LEVEL OBSERVATIONS				
					Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth
					NO CHISELLING UNDERTAKEN:			NO WATER ENCOUNTERED:				
					BOREHOLE DIAMETER			CASING DIAMETER		DEPTH SEALED		
					150mm to 20.00m			150mm to 8.60m				
All measurements in metres unless otherwise stated		10m/page Scale: 1:62.50		Coordinates to National Grid Ground Level to Ordnance Datum				Page 2 of 3				
Plant Used: Dando 2000		Coordinates / Level (mAOD): E: 524118.88 N: 212945.31 Level: 84.85		Logged By: WC		Checked By: WC		Approved By: SS				

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Project: **Broadwater Road, Welwyn Garden City** Project No: **2342.18** Hole ID: **BH412**

CABLE PERCUSSION BOREHOLE LOG

Date From / To:
 17/10/2014 - 20/10/2014

Client:
Spen Hill Developments Ltd

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results		Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm		
Borehole complete at 20.00m bgl.										

REMARKS :

1. Engineer verified logged in general accordance to BS 5930:2010.
2. Area CAT scanned prior to excavation.
3. Borehole remained dry on completion.
4. Installed with HDPE standpipe to 20.00m bgl.

CHISELLING			WATER LEVEL OBSERVATIONS					
Depth From	Depth To	Time Taken		Date	Time	Water Strike	Standing Level	Casing Depth
NO CHISELLING UNDERTAKEN:						NO WATER ENCOUNTERED:		
BOREHOLE DIAMETER			CASING DIAMETER			DEPTH SEALED		
150mm to 20.00m			150mm to 8.60m					

All measurements in metres unless otherwise stated	10m/page Scale: 1:62.50	Coordinates to National Grid Ground Level to Ordnance Datum			Page 3 of 3	
Plant Used: Dando 2000	Coordinates / Level (mAOD): E: 524118.88 N: 212945.31 Level: 84.85	Logged By: WC		Checked By: WC		Approved By: SS

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Project: Broadwater Road, Welwyn Garden City				Project No: 2342.18		Hole ID: BH413			
CABLE PERCUSSION BOREHOLE LOG				Date: 16/10/2014		Client: Spen Hill Developments Ltd			

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
MADE GROUND: Asphalt.				83.78 0.10/ 83.48 0.40					
MADE GROUND: Brown clayey slightly sandy gravel. Gravel is angular to rounded fine to coarse of mixed lithologies including brick, flint and concrete. Sand is fine to coarse. Frequent brick cobbles.					D	1	0.50		
Stiff orangey brown slightly sandy CLAY. Sand is fine to medium. Medium to coarse sand sized organic patches throughout. (LOWESTOFT FORMATION)				(5.50)	D	2	1.00		
					U	1	1.50 - 1.95	U=36/360mm	
					D	3	1.95 - 2.05		
					D	4	2.50 - 2.95 2.50 - 2.95	SPT N=4 1,0/1,1,1,1	
					B	1	3.00 - 3.40		
					U	2	3.50 - 3.95	U=52/360mm	
					D	5	3.95 - 4.05		
					D	6	4.50 - 4.95 4.50 - 4.95	SPT N=12 1,1/2,3,3,4	
Stiff light brown mottled orange and black slightly sandy CLAY. Sand is fine to medium. Potentially high organic content. (LOWESTOFT FORMATION)				77.98 5.90	U	3	6.00 - 6.45	U=61/360mm	
			(1.30)	D	7	6.45 - 6.55			
Stiff brown mottled black slightly sandy slightly gravelly CLAY. Gravel is angular to subangular fine to coarse flint. Sand is fine to coarse. Potentially high organic content. (LOWESTOFT FORMATION)				76.68 7.20	B	2	7.50 - 7.95 7.50 - 7.95	CPT N=40 4,6/8,9,10,13	
			(1.60)						
Dense to very dense brown clayey sandy angular to rounded fine to coarse flint GRAVEL. Sand is fine to coarse. Rare flint cobbles. (KESGRAVE CATCHMENT SUBGROUP)				75.08 8.80	B	3	9.00 - 9.45 9.00 - 9.45	CPT N=50/295mm (5,7/9,11,14,16/70mm)	
			(150mm)						

REMARKS : 1. Engineer verified logged in general accordance to BS 5930:2010. 2. Area CAT scanned prior to excavation. 3. Borehole remained dry on completion. 4. Installed with HDPE standpipe to 20.00m bgl.				CHISELLING			WATER LEVEL OBSERVATIONS				
				Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth
				NO CHISELLING UNDERTAKEN:			NO WATER ENCOUNTERED:				
				BOREHOLE DIAMETER			CASING DIAMETER		DEPTH SEALED		
				150mm to 20.00m			150mm to 16.60m				

All measurements in metres unless otherwise stated		10m/page Scale: 1:62.50	Coordinates to National Grid Ground Level to Ordnance Datum		Page 1 of 3
Plant Used: Dando 2000	Coordinates / Level (mAOD): E: 524096.58 N: 212991.55 Level: 83.88		Logged By: WC	Checked By: WC	Approved By: SS

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Project: Broadwater Road, Welwyn Garden City				Project No: 2342.18		Hole ID: BH413			
CABLE PERCUSSION BOREHOLE LOG				Date: 16/10/2014		Client: Spen Hill Developments Ltd			

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
Dense to very dense brown clayey sandy angular to rounded fine to coarse flint GRAVEL. Sand is fine to coarse. Rare flint cobbles. (KESGRAVE CATCHMENT SUBGROUP)(BH Continued)				(7.80)	B	4	10.50 - 10.95 10.50 - 10.95	CPT N=50/275mm (4,6/10,10,14,16/50mm)	
					D	8	12.00 - 12.45 12.00 - 12.45	CPT N=40 4,7/8,9,10,13	
					D	9	13.50 - 13.95 13.50 - 13.95	CPT N=41 5,8/8,10,11,12	
					D	10	15.00 - 15.45 15.00 - 15.45	CPT N=42 3,5/9,9,10,14	
Recovered as structureless CHALK composed of cream with rare orange veins slightly gravelly silt. Gravel is angular to subangular fine to medium extremely to very weak low to medium density cream. Rare subrounded coarse gravels and cobbles of rinded flint throughout. Grade Dm. (LEWES NODULAR/ SEAFORD CHALK FORMATION)				(3.40)	B	5	16.50 - 16.95 16.50 - 16.95	CPT N=9 9,8/3,2,2,2	
					D	11	18.00 - 18.45 18.00 - 18.45	SPT N=13 2,3/4,3,3,3	
					D	12	19.50 - 19.95 19.50 - 19.95	SPT N=14 2,3/2,3,4,5	
			16.60	67.28 16.60					
				63.88 20.00					

REMARKS :
 1. Engineer verified logged in general accordance to BS 5930:2010.
 2. Area CAT scanned prior to excavation.
 3. Borehole remained dry on completion.
 4. Installed with HDPE standpipe to 20.00m bgl.

CHISELLING			WATER LEVEL OBSERVATIONS					
Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth	
NO CHISELLING UNDERTAKEN:			NO WATER ENCOUNTERED:					
BOREHOLE DIAMETER			CASING DIAMETER		DEPTH SEALED			
150mm to 20.00m			150mm to 16.60m					

All measurements in metres unless otherwise stated	10m/page Scale: 1:62.50	Coordinates to National Grid Ground Level to Ordnance Datum	Page 2 of 3
Plant Used: Dando 2000	Coordinates / Level (mAOD): E: 524096.58 N: 212991.55 Level: 83.88	Logged By: WC	Checked By: WC Approved By: SS

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Project: **Broadwater Road, Welwyn Garden City** Project No: **2342.18** Hole ID: **BH413**

CABLE PERCUSSION BOREHOLE LOG

Date: **16/10/2014**

Client: **Spen Hill Developments Ltd**

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results		Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm		
Borehole complete at 20.00m bgl.										

REMARKS :

1. Engineer verified logged in general accordance to BS 5930:2010.
2. Area CAT scanned prior to excavation.
3. Borehole remained dry on completion.
4. Installed with HDPE standpipe to 20.00m bgl.

CHISELLING			WATER LEVEL OBSERVATIONS						
Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth		
NO CHISELLING UNDERTAKEN:					NO WATER ENCOUNTERED:				
BOREHOLE DIAMETER			CASING DIAMETER			DEPTH SEALED			
150mm to 20.00m			150mm to 16.60m						

All measurements in metres unless otherwise stated	10m/page Scale: 1:62.50	Coordinates to National Grid Ground Level to Ordnance Datum			Page 3 of 3	
Plant Used: Dando 2000	Coordinates / Level (mAOD): E: 524096.58 N: 212991.55 Level: 83.88	Logged By: WC		Checked By: WC		Approved By: SS

Delta-Simons 3 Henley Office Park, Doddington Road, Lincoln, LN6 3QR Tel: +44 (0) 870 0400 012 Fax: +44 (0) 1522 698393 Email: info@deltasimons.com									
Project: Broadwater Road, Welwyn Garden City				Project No: 2342.18		Hole ID: BH414			
CABLE PERCUSSION BOREHOLE LOG				Date: 14/10/2014		Client: Spen Hill Developments Ltd			

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results	
					TYPE	REF	Depth	SPT N Value/Drive mm	
MADE GROUND: Asphalt.				85.04 - 0.15					
MADE GROUND: Brown clayey slightly sandy gravel. Gravel is angular to rounded fine to coarse of mixed lithologies including brick, flint and concrete. Sand is fine to coarse. Frequent brick cobbles.				(0.85)	D	1	0.50		
				84.19 - 1.00	D	2	1.00		
Stiff orangey brown slightly sandy gravelly CLAY. Gravel is angular to subrounded fine to coarse flint. Sand is fine to coarse. (LOWESTOFT FORMATION)									
					D	3	1.50 - 2.00 1.50 - 1.95	CPT N=19 2,3/4,4,5,6	
				(3.20)	U	1	2.50 - 2.95	U=35/225mm	
					D	4	3.50 - 4.00 3.50 - 3.95	SPT N=10 2,3/2,4,2,2	
Medium dense orangey brown slightly gravelly fine to medium SAND. Gravel is angular to subrounded fine to medium SAND. Gravel is angular to subrounded fine to coarse flint. (POSSIBLE LOWESTOFT FORMATION)				80.99 - 4.20	B	1	4.20		
				(1.50)	D	5	4.50 - 5.00 4.50 - 4.95	CPT N=13 2,3/4,3,3,3	
Stiff orange brown slightly gravelly sandy CLAY. Gravel is angular to subrounded fine to coarse flint. Sand is fine to coarse. (LOWESTOFT FORMATION)				79.49 - 5.70	B	2	5.70		
					D	6	6.00 - 6.50 6.00 - 6.45	SPT N=25 2,3/4,5,7,9	
				(2.20)	U	2	7.50 - 7.95	U=45/315mm	
Medium dense orange brown gravelly fine to coarse SAND. Gravel is angular to rounded fine to coarse flint. Rare cobble sized clay pockets. (KESGRAVE CATCHMENT SUBGROUP)				77.29 - 7.90	B	3	8.00		
					D	7			
						D	8	9.00 - 9.50 9.00 - 9.45	CPT N=26 4,5/6,6,7,7
				(3.90)					

REMARKS : 1. Engineer verified logged in general accordance to BS 5930:2010. 2. Area CAT scanned prior to excavation. 3. Borehole remained dry on completion. 4. Backfilled with arisings.				CHISELLING			WATER LEVEL OBSERVATIONS				
				Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth
				NO CHISELLING UNDERTAKEN:			NO WATER ENCOUNTERED:				
				BOREHOLE DIAMETER			CASING DIAMETER		DEPTH SEALED		

All measurements in metres unless otherwise stated		10m/page Scale: 1:62.50	Coordinates to National Grid Ground Level to Ordnance Datum		Page 1 of 2
Plant Used: Dando 2000	Coordinates / Level (mAOD): E: 524052.85 N: 212879.17 Level: 85.19		Logged By: WC	Checked By: WC	Approved By: SS

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Project: Broadwater Road, Welwyn Garden City				Project No: 2342.18		Hole ID: BH414						
CABLE PERCUSSION BOREHOLE LOG				Date: 14/10/2014		Client: Spen Hill Developments Ltd						
DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results				
					TYPE	REF	Depth	SPT N Value/Drive mm				
Medium dense orange brown gravelly fine to coarse SAND. Gravel is angular to rounded fine to coarse flint. Rare cobble sized clay pockets.(KESGRAVE CATCHMENT SUBGROUP)(BH Continued)					D	9	10.50 - 11.00 10.50 - 10.95	CPT N=27 5,6/6,7,7,7				
Recovered as structureless CHALK composed of cream with rare orange veins slightly gravelly silt. Gravel is angular to subangular fine to medium extremely weak low density cream. Rare subrounded coarse gravels and cobbles of rinded flint throughout. Grade Dm. (LEWES NODULAR/SEAFORD CHALK FORMATION)			73.39 11.80		B D	4 10	11.80 12.00 - 12.50 12.00 - 12.45	SPT N=1 1,0/1,0,0,0				
VOID			(1.15)									
			72.24 12.95									
			(3.35)									
			68.89 16.30									
Loose orange brown gravelly fine to coarse clayey SAND. Gravel is subangular to subrounded fine to coarse flint. (DISSOLUTION SOILS)			(1.20)		D	11	16.50					
			67.69 17.50				17.50 - 17.95	CPT N=2 1,0/0,1,0,1				
Borehole terminated due to difficult drilling associated with the void at 17.50m bgl.												
REMARKS : 1. Engineer verified logged in general accordance to BS 5930:2010. 2. Area CAT scanned prior to excavation. 3. Borehole remained dry on completion. 4. Backfilled with arisings.					CHISELLING			WATER LEVEL OBSERVATIONS				
					Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth
					NO CHISELLING UNDERTAKEN:			NO WATER ENCOUNTERED:				
					BOREHOLE DIAMETER			CASING DIAMETER		DEPTH SEALED		
All measurements in metres unless otherwise stated		10m/page Scale: 1:62.50	Coordinates to National Grid Ground Level to Ordnance Datum				Page 2 of 2					
Plant Used: Dando 2000		Coordinates / Level (mAOD): E: 524052.85 N: 212879.17 Level: 85.19	Logged By: WC		Checked By: WC		Approved By: SS					

Delta-Simons 3 Henley Office Park, Doddington Road, Lincoln, LN6 3QR Tel: +44 (0) 870 0400 012 Fax: +44 (0) 1522 698393 Email: info@deltasimons.com									
Project: Broadwater Road, Welwyn Garden City				Project No: 2342.18		Hole ID: BH415			
CABLE PERCUSSION BOREHOLE LOG				Date From / To: 13/10/2014 - 14/10/2014		Client: Spen Hill Developments Ltd			

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
MADE GROUND: Concrete.				84.72 0.20					
MADE GROUND: Brown clayey slightly sandy gravel. Gravel is angular to rounded fine to coarse of mixed lithologies including brick, flint and concrete. Sand is fine to coarse. Frequent brick cobbles.				84.32 0.60	D	1	0.50		
Stiff orange brown sandy gravelly CLAY. Gravel is angular to subrounded fine to coarse flint. Sand is fine to coarse.(LOWESTOFT FORMATION)				(2.80)	B	1	1.50 - 1.95 1.50 - 1.95	CPT N=50/170mm (7,11/19,24,7/20mm)	
					D	3	2.50 - 2.95 2.50 - 2.95	CPT N=27 4,5/5,6,7,9	
Stiff orange brown sandy gravelly CLAY. Gravel is angular to subrounded fine to coarse flint. Sand is fine to coarse. Hydrocarbon odour throughout. (LOWESTOFT FORMATION)				(1.20)	D	4	3.50 - 3.95 3.50 - 3.95	CPT N=23 3,4/4,5,7,7	
					B	2	4.50 - 4.95 4.50 - 4.95	CPT N=24 3,4/5,6,6,7	
Stiff orangey brown slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse flint. Sand is fine to medium. (LOWESTOFT FORMATION)				(1.30)					
Dense orange brown gravelly fine to coarse SAND. Gravel is angular to rounded fine to coarse flint. Rare flint cobbles. (KESGRAVE CATCHMENT SUBGROUP)			(150mm)	(5.60)	B	3	6.00 - 6.45 6.00 - 6.45	CPT N=43 4,6/7,10,12,14	
					D	5	7.50 - 7.95 7.50 - 7.95	CPT N=42 3,5/9,9,11,13	
					D	6	9.00 - 9.45 9.00 - 9.45	CPT N=37 3,5/7,8,10,12	

REMARKS : 1. Engineer verified logged in general accordance to BS 5930:2010. 2. Area CAT scanned prior to excavation. 3. Groundwater encountered at 27.00m bgl. 4. Installed with HDPE standpipe to 30.00m bgl.	CHISELLING			WATER LEVEL OBSERVATIONS					
	Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth	
	NO CHISELLING UNDERTAKEN:			1	14-10-14		27.00	25.00	
	BOREHOLE DIAMETER			CASING DIAMETER		DEPTH SEALED			
150mm to 30.00m			150mm to 11.50m						

All measurements in metres unless otherwise stated	10m/page Scale: 1:62.50	Coordinates to National Grid Ground Level to Ordnance Datum	Page 1 of 4
Plant Used: Dando 2000	Coordinates / Level (mAOD): E: 524101.97 N: 212899.63 Level: 84.92	Logged By: WC	Checked By: WC Approved By: SS

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Project: Broadwater Road, Welwyn Garden City				Project No: 2342.18		Hole ID: BH415						
CABLE PERCUSSION BOREHOLE LOG				Date From / To: 13/10/2014 - 14/10/2014		Client: Spen Hill Developments Ltd						
DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results	Backfill Details			
					TYPE	REF	Depth	SPT N Value/Drive mm				
Dense orange brown gravelly fine to coarse SAND. Gravel is angular to rounded fine to coarse flint. Rare flint cobbles. (KESGRAVE CATCHMENT SUBGROUP)(BH Continued)			11.50	73.42 11.50	D	7	10.50 - 10.95 10.50 - 10.95	CPT N=42 4,6/8,9,11,14				
Recovered as structureless CHALK composed of cream with rare orange veins slightly gravelly silt. Gravel is angular to subangular fine to medium extremely to very weak low to medium density cream. Rare subrounded coarse gravels and cobbles of rinded flint throughout. Grade Dm. (LEWES NODULAR/ SEAFORD CHALK FORMATION)					D	8	12.00 - 12.45 12.00 - 12.45	CPT N=28 1,2/4,8,11,5				
					D	9	13.50 - 13.95 13.50 - 13.95	SPT N=14 1,2/4,4,3,3				
					D	10	15.00 - 15.45 15.00 - 15.45	SPT N=21 3,4/4,5,6,6				
					D	11	16.50 - 16.95 16.50 - 16.95	SPT N=12 2,2/3,2,4,3				
					D	12	18.00 - 18.45 18.00 - 18.45	SPT N=34 2,3/6,8,9,11				
					D	13	19.50 - 19.95 19.50 - 19.95	SPT N=18 2,2/3,5,6,4				
REMARKS : 1. Engineer verified logged in general accordance to BS 5930:2010. 2. Area CAT scanned prior to excavation. 3. Groundwater encountered at 27.00m bgl. 4. Installed with HDPE standpipe to 30.00m bgl.			CHISELLING			WATER LEVEL OBSERVATIONS						
			Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth		
			NO CHISELLING UNDERTAKEN:			1	14-10-14		27.00	25.00		
						BOREHOLE DIAMETER			CASING DIAMETER		DEPTH SEALED	
						150mm to 30.00m			150mm to 11.50m			
All measurements in metres unless otherwise stated		10m/page	Scale: 1:62.50		Coordinates to National Grid Ground Level to Ordnance Datum			Page 2 of 4				
Plant Used: Dando 2000		Coordinates / Level (mAOD): E: 524101.97 N: 212899.63 Level: 84.92		Logged By: WC		Checked By: WC		Approved By: SS				

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Project: **Broadwater Road, Welwyn Garden City** Project No: **2342.18** Hole ID: **BH415**

CABLE PERCUSSION BOREHOLE LOG

Date From / To:
13/10/2014 - 14/10/2014

Client:
Spen Hill Developments Ltd

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
Recovered as structureless CHALK composed of cream with rare orange veins slightly gravelly silt. Gravel is angular to subangular fine to medium extremely to very weak low to medium density cream. Rare subrounded coarse gravels and cobbles of rinded flint throughout. Grade Dm. (LEWES NODULAR/ SEAFORD CHALK FORMATION)(BH Continued)				(18.50)	D	14	21.00 - 21.45 21.00 - 21.45	SPT N=37 4,5/7,8,10,12	
					D	15	22.50 - 22.95 22.50 - 22.95	SPT N=37 4,5/8,12,9,8	
					D	16	24.00 - 24.45 24.00 - 24.45	SPT N=40 5,8/9,9,10,12	
					D	17	25.50 - 25.95 25.50 - 25.95	SPT N=50/275mm (4,7/9,10,15,16/50mm)	
					D	18	27.00 - 27.45 27.00 - 27.45	SPT N=43 5,9/9,12,9,13	
					D	19	28.50 - 28.95 28.50 - 28.95	SPT N=42 5,6/7,9,12,14	
			54.92	30.00	D	20	30.00 - 30.45		

REMARKS :

1. Engineer verified logged in general accordance to BS 5930:2010.
2. Area CAT scanned prior to excavation.
3. Groundwater encountered at 27.00m bgl.
4. Installed with HDPE standpipe to 30.00m bgl.

CHISELLING			WATER LEVEL OBSERVATIONS					
Depth From	Depth To	Time Taken		Date	Time	Water Strike	Standing Level	Casing Depth
			1	14-10-14		27.00	25.00	
NO CHISELLING UNDERTAKEN:								
BOREHOLE DIAMETER			CASING DIAMETER			DEPTH SEALED		
150mm to 30.00m			150mm to 11.50m					

All measurements in metres unless otherwise stated	10m/page Scale: 1:62.50	Coordinates to National Grid Ground Level to Ordnance Datum			Page 3 of 4	
Plant Used: Dando 2000	Coordinates / Level (mAOD): E: 524101.97 N: 212899.63 Level: 84.92	Logged By: WC		Checked By: WC		Approved By: SS

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Project: **Broadwater Road, Welwyn Garden City** Project No: **2342.18** Hole ID: **BH415**

CABLE PERCUSSION BOREHOLE LOG

Date From / To:
13/10/2014 - 14/10/2014

Client:
Spen Hill Developments Ltd

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
Borehole complete at 30.00m bgl.							30.00 - 30.45	SPT N=41 4,6/8,9,11,13	

REMARKS :

1. Engineer verified logged in general accordance to BS 5930:2010.
2. Area CAT scanned prior to excavation.
3. Groundwater encountered at 27.00m bgl.
4. Installed with HDPE standpipe to 30.00m bgl.

CHISELLING			WATER LEVEL OBSERVATIONS					
Depth From	Depth To	Time Taken		Date	Time	Water Strike	Standing Level	Casing Depth
NO CHISELLING UNDERTAKEN:			1	14-10-14		27.00	25.00	
	BOREHOLE DIAMETER			CASING DIAMETER			DEPTH SEALED	
	150mm to 30.00m			150mm to 11.50m				
	Coordinates to National Grid Ground Level to Ordnance Datum						Page 4 of 4	
	Logged By: WC			Checked By: WC			Approved By: SS	

All measurements in metres
 unless otherwise stated

10m/page Scale: 1:62.50

Coordinates to National Grid
 Ground Level to Ordnance Datum

Page 4 of 4

Plant Used: Dando 2000	Coordinates / Level (mAOD): E: 524101.97 N: 212899.63 Level: 84.92	Logged By: WC	Checked By: WC	Approved By: SS
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Delta-Simons 3 Henley Office Park, Doddington Road, Lincoln, LN6 3QR Tel: +44 (0) 870 0400 012 Fax: +44 (0) 1522 698393 Email: info@deltasimons.com									
Project: Broadwater Road, Welwyn Garden City				Project No: 2342.18		Hole ID: BH416			
CABLE PERCUSSION BOREHOLE LOG				Date From / To: 21/10/2014 - 22/10/2014		Client: Spen Hill Developments Ltd			

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
MADE GROUND: Dark brown sandy slightly gravelly clay. Gravel is angular to rounded fine to coarse flint and rare brick. Sand is fine to coarse. Abundant rootlets in top 200mm.				(0.60) 83.72 0.60	D	1	0.50		
Stiff orangey brown slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse flint. Sand is fine to coarse. (LOWESTOFT FORMATION)				(2.50)	D	2	1.00		
					U	1	1.50 - 1.95	U=90/225mm	
					D	3	1.95 - 20.50		
					B	1	2.50 - 2.95 2.50 - 2.95	CPT N=30 3,4/4,6,9,10	
Stiff brown slightly sandy CLAY. Sand is fine to medium. (LOWESTOFT FORMATION)				(1.50)	D	4	3.10		
					U	2	3.50 - 3.95	U=79/450mm	
Dense orangey brown fine to coarse SAND. Rare subangular fine to medium flint gravel. (LOWESTOFT FORMATION)				(3.00)	D	5	3.95 - 4.05		
					D	6	4.50 - 4.95 4.50 - 4.95	SPT N=31 3,4/4,6,9,12	
					B	2	6.00 - 6.45 6.00 - 6.45	CPT N=45 5,7/8,10,13,14	
Medium dense to dense yellowy brown fine to medium SAND. Rare subangular fine to coarse flint gravel. (KESGRAVE CATCHMENT SUBGROUP)				(1.80)	B	3	7.50 - 7.95 7.50 - 7.95	CPT N=28 4,5/6,6,7,9	
					D	7	9.00 - 9.45 9.00 - 9.45	SPT N=41 4,4/6,9,12,14	

REMARKS : 1. Engineer verified logged in general accordance to BS 5930:2010. 2. Area CAT scanned prior to excavation. 3. Borehole remained dry on completion. 4. Installed with HDPE standpipe to 13.50m bgl.	CHISELLING			WATER LEVEL OBSERVATIONS				
	Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth
	NO CHISELLING UNDERTAKEN:			NO WATER ENCOUNTERED:				
	BOREHOLE DIAMETER			CASING DIAMETER		DEPTH SEALED		
	150mm to 13.40m			150mm to 12.60m				

All measurements in metres unless otherwise stated	10m/page Scale: 1:62.50	Coordinates to National Grid Ground Level to Ordnance Datum	Page 1 of 2
Plant Used: Dando 2000	Coordinates / Level (mAOD): E: 524065.76 N: 213041.5 Level: 84.32	Logged By: WC	Checked By: WC Approved By: SS

Delta-Simons 3 Henley Office Park, Doddington Road, Lincoln, LN6 3QR Tel: +44 (0) 870 0400 012 Fax: +44 (0) 1522 698393 Email: info@deltasimons.com											
Project: Broadwater Road, Welwyn Garden City				Project No: 2342.18		Hole ID: BH416					
CABLE PERCUSSION BOREHOLE LOG				Date From / To: 21/10/2014 - 22/10/2014		Client: Spen Hill Developments Ltd					
DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results	Backfill Details		
					TYPE	REF	Depth	SPT N Value/Drive mm			
Medium dense orangey brown sandy angular to subrounded fine to coarse flint GRAVEL. Sand is fine to coarse. Rare flint cobbles.(KESGRAVE CATCHMENT SUBGROUP)(BH Continued)				(3.20)	B	4	10.50 - 10.95 10.50 - 10.95	CPT N=28 3,4/4,6,8,10			
No recovery pushing flint cobble.			12.60	(0.80)	D	8	12.00 - 12.45 12.00 - 12.45	CPT N=22 4,5/4,6,6,6			
Borehole terminated due to difficult conditions at 13.40m bgl.			70.92 13.40								
REMARKS : 1. Engineer verified logged in general accordance to BS 5930:2010. 2. Area CAT scanned prior to excavation. 3. Borehole remained dry on completion. 4. Installed with HDPE standpipe to 13.50m bgl.				CHISELLING			WATER LEVEL OBSERVATIONS				
				Depth From	Depth To	Time Taken	Date	Time	Water Strike	Standing Level	Casing Depth
				NO CHISELLING UNDERTAKEN:			NO WATER ENCOUNTERED:				
				BOREHOLE DIAMETER			CASING DIAMETER		DEPTH SEALED		
				150mm to 13.40m			150mm to 12.60m				
All measurements in metres unless otherwise stated		10m/page Scale: 1:62.50	Coordinates to National Grid Ground Level to Ordnance Datum				Page 2 of 2				
Plant Used: Dando 2000		Coordinates / Level (mAOD): E: 524065.76 N: 213041.5 Level: 84.32	Logged By: WC		Checked By: WC		Approved By: SS				